

CLAIMS

What is claimed is:

1. An isolated nucleic acid comprising:  
a nucleotide sequence encoding the 435 amino acid polypeptide of SEQ ID  
5 NO: 17,  
wherein X<sup>287</sup> is Asp, Glu, or Ser;  
wherein X<sup>291</sup> is Asp, Glu, or Thr; and  
wherein X<sup>293</sup> is Asp, Glu, or Ser.
2. The nucleic acid of Claim 1, wherein said isolated nucleic acid encodes a  
10 polypeptide selected from the group consisting of:  
SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 6, SEQ ID NO: 8, SEQ ID  
NO: 10, and SEQ ID NO: 23.
3. The nucleic acid of Claim 1, wherein said nucleic acid comprises a nucleic acid  
15 selected from the group consisting of:  
SEQ ID NO: 1, SEQ ID NO: 3, SEQ ID NO: 5, SEQ ID NO: 7, SEQ ID  
NO: 9, and SEQ ID NO: 22.
4. The nucleic acid of Claim 3, wherein said isolated nucleic acid consists of  
a nucleotide acid selected from the group consisting of:  
20 SEQ ID NO: 1, SEQ ID NO: 3, SEQ ID NO: 5, SEQ ID NO: 7, SEQ ID  
NO: 9, and SEQ ID NO: 22.
5. An isolated polypeptide comprising:  
the 435 amino acid polypeptide of SEQ ID NO: 17:  
wherein X<sup>287</sup> is Asp, Glu, or Ser;  
wherein X<sup>291</sup> is Asp, Glu, or Thr; and

wherein X<sup>293</sup> is Asp, Glu, or Ser.

6. The polypeptide of Claim 5, wherein said polypeptide comprises a polypeptide selected from the group consisting of:  
SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 6, SEQ ID NO: 8, SEQ ID NO: 10, and SEQ ID NO: 23.
7. The polypeptide of Claim 6, wherein said polypeptide consists of a polypeptide selected from the group consisting of:  
SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 6, SEQ ID NO: 8, SEQ ID NO: 10, and SEQ ID NO: 23.
8. An expression cassette comprising:  
a promoter operably linked to a nucleic acid encoding the 435 amino acid polypeptide of SEQ ID NO: 17,  
wherein X<sup>287</sup> is Asp, Glu, or Ser;  
wherein X<sup>291</sup> is Asp, Glu, or Thr; and  
wherein X<sup>293</sup> is Asp, Glu, or Ser.
9. The cassette of Claim 8, wherein said nucleic acid encodes a polypeptide selected from the group consisting of:  
SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 6, SEQ ID NO: 8, SEQ ID NO: 10, and SEQ ID NO: 23.
10. The cassette of Claim 8, wherein said nucleic comprises a nucleic acid selected from the group consisting of:  
SEQ ID NO: 1, SEQ ID NO: 3, SEQ ID NO: 5, SEQ ID NO: 7, SEQ ID NO: 9, and SEQ ID NO: 22.
11. A method for assaying protein kinase activity comprising:

incubating an isolated polypeptide comprising:

the 435 amino acid polypeptide of SEQ ID NO: 17,

wherein X<sup>287</sup> is Asp, Glu, or Ser;

wherein X<sup>291</sup> is Asp, Glu, or Thr; and

5                    wherein X<sup>293</sup> is Asp, Glu, or Ser;

in the presence of ATP and a MKK7 $\gamma$ 1 substrate; and

determining whether said MKK7 $\gamma$ 1 substrate is phosphorylated.

12.    The method of Claim 11, wherein said ATP is  $\gamma$ -<sup>32</sup>P-ATP.
13.    The method of Claim 12, wherein said isolated polypeptide comprises  
10    SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 6, SEQ ID NO: 8, SEQ ID  
      NO: 10, or SEQ ID NO: 23.
14.    The method of Claim 11, wherein said method further comprises  
      incubating said isolated polypeptide in the presence of a candidate  
      therapeutic agent having a molecular weight of between 100 Da and  
15    1000 Da.
15.    The method of Claim 11, wherein said MKK7 $\gamma$ 1 substrate is JNK1.